

CITY

Air Curtains



Biddle



FRESH THINKING IN CLIMATE SEPARATION TECHNOLOGY

The latest development in a long line of leading technology air curtains, Biddle's CITY incorporates improved structural design and enhanced aesthetic appeal without compromising its award-winning performance. Most importantly, by utilising world class design and engineering, the CITY now brings energy and cost saving benefits at a lower installed cost than ever before.

PATENTED AIRFLOW TECHNOLOGY

One of the main functions of an air curtain is to condition outdoor air as it enters the building. For this to be achieved the jet must cover the full width of the entrance, so that it cannot be bypassed by incoming air. However, ensuring the jet reaches the floor level is more difficult, with turbulence at the jet outlet being a critical factor.

AIRFLOW TECHNOLOGY

Along with the TNO wind tunnel facility at Apeldoorn in the Netherlands, Biddle have successfully developed a patented rectifier, which minimises turbulence in the discharge airstream. With reduced turbulence, induction of the surrounding air is also reduced, which in turn, increases the jet throw by 30-40% of an equal volume/velocity unit. The pressure chamber behind the rectifier evenly distributes the air stream across the whole width of the unit. The result is a deeply penetrating, laminar airstream, reducing energy consumption whilst increasing comfort levels.

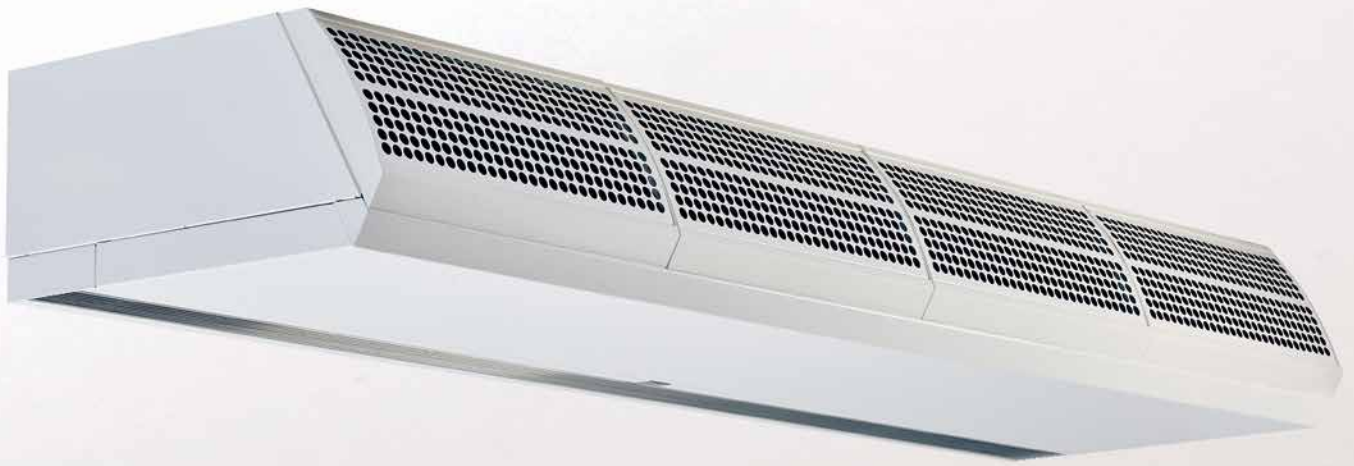
ENERGY EFFICIENCY

By using their patented rectifier in the CITY range, Biddle have reduced the amount of air that escapes from the jet outlet. This saves a large amount of energy, in comparison to other air curtains. Measurements have shown that with the patented rectifier, up to 94% of the heat input to the air curtain can be transferred to the entrance area and subsequently contributes to overall room heating, an important factor when considering current building energy costs.

APPLICATIONS

A complete range of models ensures effectiveness in creating a comfortable climate depending on different factors, including door size, the building and its location. CITY is available in three performance models, including the latest CITY Power Plus for higher entrance doors, and a CB variant for use with condensing boilers.

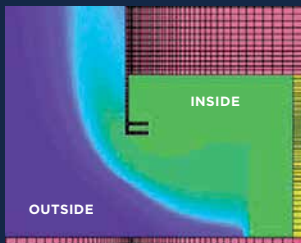
Whether for a high street store, supermarket or a head office building, Biddle works closely with end-users, consultants, architects and installers at every stage of the design, to ensure the optimum solution is achieved.



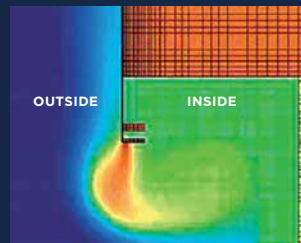
HOW IT WORKS

For over 15 years Biddle has invested heavily in research and development to create an energy efficient designer product of the highest quality. Biddle air curtains bring energy efficiency and thermal comfort. One big advantage of a CITY air curtain is that it offers real energy savings - research echoed by BSRIA's research.

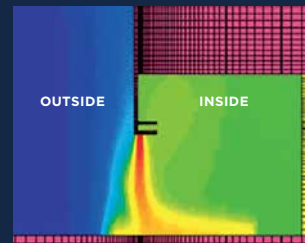
Biddle's CITY was developed to deliver greater comfort than a conventional air curtain, to retail customers and employees in all weathers. Using Biddle's patented rectifier technology, the CITY ensures that the air curtain supplies air at the correct velocity, volume and temperature to satisfy thermal comfort throughout the year.



Entrance with no air curtain



Entrance with inefficient air curtain



Entrance with a CITY air curtain

THE AFFORDABLE CITY RANGE

We have a comprehensive range of air curtains – there will be one ideally suited to your particular situation. There are three ceiling recessed options plus one free hanging exposed model.

CITY

Ideal for doorways up to 2.7m high and aimed primarily at the retail market where looks, performance, energy efficiency and budget are critical considerations.

CITY PLUS

A more powerful version of the CITY. For use up to 3.2m high

CITY POWERPLUS

Designed for door heights up to 3.7m. This is the latest model in the range and is ideally suited for the large prestigious entrances to shopping malls, large retail units and commercial developments

PRODUCT SELECTOR

🕒 2.7m mounting height

🕒 Small/medium

🕒 High street

🕒 3.2m mounting height

🕒 Medium/large

🕒 High street

🕒 Retails outlets

🕒 3.7m mounting height

🕒 Large/extra

🕒 Large high street

🕒 Retails outlets

🕒 Shopping malls

🕒 Commercial

🕒 Developments

MOUNTING

Fast and simple mounting brackets are supplied with each unit. They provide lateral adjustment so each unit can be accurately mounted in the desired position. For wall mounting purposes, brackets are available.

CONTROLS

With quick project turn-around times, any reduction in installation time is greatly beneficial. Biddle therefore supply a standard controls package which is simply connected between the unit and controller via a low voltage plug-in cable. Electronic touchpad controllers provide localised on/off, and three-speed control – as well as two heat settings on electric units. Each controller can control up to ten units, wired as master/slave.

In all cases the CITY has volt free contacts for input of remote switching devices, namely:

- ⊖ Timers
- ⊖ Thermostats
- ⊖ Door switches
- ⊖ BMS etc

Alternatively, and if the controller is not preferred, the CITY range can be configured for remote operation by a Building Management System (BMS). If you have particular requirements please contact the Biddle sales office for detailed advice.

SPECIFICATIONS

⊖ CASING

Casings are manufactured from zinc coated steel, extra strengthened to minimise vibration. All models have inspection/access panels on the underside of the unit. Unit casings are finished in White (RAL 9016). The free hanging model is supplied with sectional inlet grilles that have a grey/white finish. Other RAL colours are available on request.

⊖ GRILLES

All units are supplied with a patented rectifier grille for the discharge air. Inlet grilles have filters fitted directly behind the grille blades for ease of maintenance. All rectifiers and grilles have an Aluminium finish.

⊖ MOTOR/FAN ASSEMBLY

Two or more, dual inlet, vibration-free centrifugal fans, each driven by a suspended rotor motor. The fan casing and impeller are made from zinc coated steel. The motor is manufactured according to EN 60-335-1, protection class IP44 (CITY) or IP54 (CITYPlus and PowerPlus), and insulation class F. All motors are fitted with thermal overload protection.

⊖ LPHW HEATING COIL

The heating coil comprises Copper tubes with Aluminium fins. The water connections are G1" female thread. Test pressure is 30bars and the operating pressure is 16bars max. at 120°C.

⊖ ELECTRIC HEATING COIL

The electric heating coil has Aluminium fins and is controlled by the electronic control board. The elements are fitted with high temperature cut-out thermostats to prevent overheating. In addition when the unit is switched off, the fans will continue to rotate until the elements have cooled sufficiently.

⊖ CONTROL AND OPERATION

The touchpad controller has three buttons for controlling the fan speed, as well as manual control for on/off. Electrically heated units have two additional buttons for 1st and 2nd stage heating control. The controller is connected to the air curtain with a low voltage cable, which has RJ11 plugs fitted. This type of cable is also used to inter-connect multiple units. Enable inputs from a room thermostat, BMS or door switch can be connected directly to the potential free contacts on top of each unit. For specific requirements please contact the Biddle sales office.

CITY

Technical Details



CITY

CITY			Water heating				Electrical heating			
			100 W	150 W	200 W	250 W	100 E	150 E	200 E	250 E
Maximum installation height	m	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	
Optimum door width	m	0.8	1.3	1.8	2.3	0.8	1.3	1.8	2.3	
Unit width	m	1.0	1.5	2.0	2.5	1.0	1.5	2.0	2.5	
			A/B	A/B	A/B	A/B				
Heating capacity** (max/ controlled)	@ Speed 1	kW	7.5/3.2	11.8/4.7	16.1/6.3	20.4/7.8	3.6	5.3	7.2	8.9
	2	kW	9.2/4.1	14.5/6.2	19.8/8.3	25.2/10.3	3.6/7.2	5.3/10.6	7.2/14.3	8.9/17.8
	3	kW	11.6/5.9	18.4/8.9	25.2/11.6	32.0/14.6	3.6/7.2	5.3/10.6	7.2/14.3	8.9/17.8
Air volume	@ Speed 1	m³/s	0.171	0.257	0.343	0.429	0.171	0.257	0.343	0.429
	2	m³/s	0.229	0.343	0.457	0.572	0.229	0.343	0.457	0.572
	3	m³/s	0.323	0.485	0.648	0.808	0.323	0.485	0.648	0.808
Water flow rate (max)	l/s	0.257	0.409	0.56	0.71	n/a	n/a	n/a	n/a	
Coil hyd pressure drop (max)	kPa	1.9	5.5	11.5	20.3	n/a	n/a	n/a	n/a	
Electrical supply			230V/1ph/50Hz				400V/3ph/50Hz			
Max power (motor/elec heating)	kW	0.23	0.35	0.46	0.58	7.5	11.2	15.1	18.7	
Max running current	A	1.06	1.59	2.12	2.65	3 x 12.4	3 x 18.4	3 x 24.8	3 x 30.8	
Noise level at 3m*	@ Speed 2	dB(A)	37	39	40	41	37	39	40	41
Weight (dry)	Model F	kg	40	58	73	90	43	60	78	94
	Model R	kg	54	80	102	126	57	82	107	130
	Model R(O)	kg	49	73	93	114	52	74	97	118
	Model C	kg	52	75	96	118	55	77	101	122

* Typically NR = dB(A) - 4

** Heating Capacities A/B

A: Denotes the maximum heating capacity with 82/71°C flow & return water temperatures. The unit discharges air at its maximum temperature.

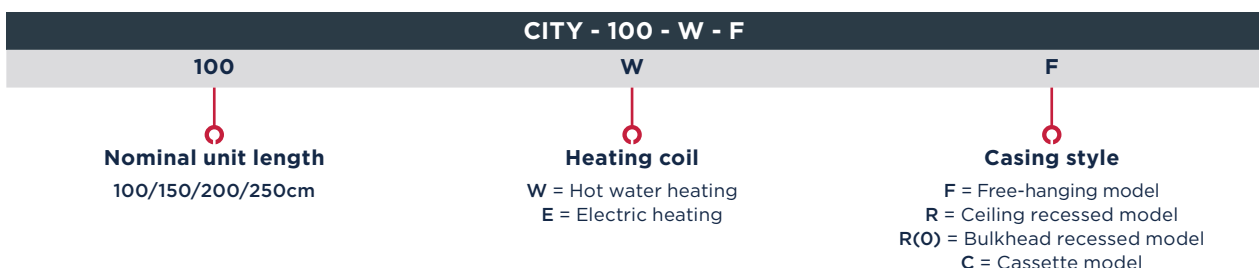
B: Denotes the capacity when the optional 3 port valve is fitted, controlling the discharge air temperature to 35°C.

BENEFITS

- Aesthetically designed unit
- Mounting heights up to 2.7m
- Incorporates patented Invisidor technology
- Suitable for most high street applications

MODEL REFERENCE

The model reference consists of a code giving unit size, coil and casing arrangement.



CITY PLUS

CITY Plus			Water heating				Electrical heating			
			100 W	150 W	200 W	250 W	100 E	150 E	200 E	250 E
Maximum installation height	m		3.2	3.2	3.2	3.2	3.2	3.2	3.2	
Optimum door width	m		0.8	1.3	1.8	2.3	0.8	1.3	1.8	2.3
Unit width	m		1.0	1.5	2.0	2.5	1.0	1.5	2.0	2.5
			A/B	A/B	A/B	A/B				
Heating capacity** (max/ controlled)	@ Speed 1	kW	9.6/4.5	15.2/6.7	20.7/9.0	26.3/11.3	5.4	8.0	10.7	13.3
	2	kW	13.3/7.2	19.0/9.2	26.1/12.4	33.1/15.6	5.4/8.9	8.0/13.3	10.7/17.9	13.3/22.2
	3	kW	14.3/8.2	22.7/12.3	31.2/16.2	39.6/20.5	5.4/8.9	8.0/13.3	10.7/17.9	13.3/22.2
Air volume	@ Speed 1	m ³ /s	0.243	0.365	0.486	0.608	0.243	0.365	0.486	0.608
	2	m ³ /s	0.400	0.510	0.679	0.849	0.400	0.510	0.679	0.849
	3	m ³ /s	0.446	0.669	0.892	1.115	0.446	0.669	0.892	1.115
Water flow rate (max)	l/s		0.32	0.505	0.692	0.88	n/a	n/a	n/a	n/a
Coil hyd pressure drop (max)	kPa		2.9	8.2	17.1	30.2	n/a	n/a	n/a	n/a
Electrical supply			230V/1ph/50Hz				415V/3ph/50Hz			
Max power (motor/elec heating)	kW		0.37	0.56	0.75	0.94	9.4	14.0	18.8	23.4
Max running current	A		1.64	2.46	3.28	4.10	3 x 15.7	3 x 23.4	3 x 31.4	3 x 39.1
Noise level at 3m*	@ Speed 2	dB(A)	44	46	47	48	44	46	47	48
Weight (dry)	Model F	kg	44	63	82	97	45	67	87	106
	Model R	kg	59	85	111	133	60	89	116	142
	Model R(O)	kg	54	77	101	121	55	81	106	129
	Model C	kg	56	80	105	125	57	84	110	134

* Typically NR = dB(A) - 4

** Heating capacities A/B

A: Denotes the maximum heating capacity with 82/71°C flow & return water temperatures. The unit discharges air at its maximum temperature.

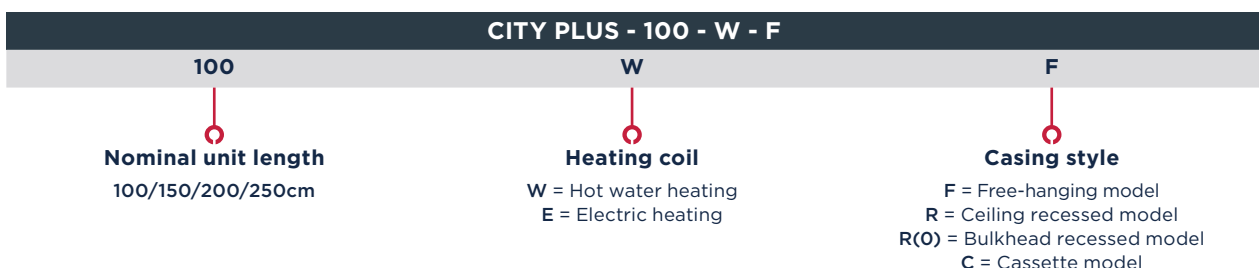
B: Denotes the capacity when the optional 3 port valve is fitted, controlling the discharge air temperature to 35°C.

BENEFITS

- Choice of casing styles
- Energy efficient
- Suited to medium size high street retail outlets
- Mounting heights up to 3.2m
- Simple control

MODEL REFERENCE

The model reference consists of a code giving unit size, coil and casing arrangement.



CITY POWERPLUS

CITY PowerPlus			Water heating				Electrical heating			
			100 W	150 W	200 W	250 W	100 E	150 E	200 E	250 E
Maximum installation height	m	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	
Optimum door width	m	0.8	1.3	1.8	2.3	0.8	1.3	1.8	2.3	
Unit width	m	1.0	1.5	2.0	2.5	1.0	1.5	2.0	2.5	
			A/B	A/B	A/B	A/B				
Heating capacity** (max/controlled)	@ Speed 1	kW	17.3/8.1	26.0/12.0	35.5/16.1	45.1/20.1	10.7	15.9	21.5	26.7
	2	kW	20.5/10.4	30.8/15.6	42.2/20.8	53.7/25.9	10.7/21.5	15.9/31.8	21.5/43.0	26.7/53.4
	3	kW	26.6/15.6	40.0/23.5	54.9/31.3	69.9/39.1	10.7/21.5	15.9/31.8	21.5/43.0	26.7/53.4
Air volume	@ Speed 1	m³/s	0.442	0.663	0.884	1.105	0.442	0.663	0.884	1.105
	2	m³/s	0.571	0.856	1.142	1.428	0.571	0.856	1.142	1.428
	3	m³/s	0.862	1.292	1.723	2.153	0.862	1.292	1.723	2.153
Water flow rate (max)	l/s	0.59	0.89	1.22	1.55	n/a	n/a	n/a	n/a	
Coil hyd pressure drop (max)	kPa	18.8	10.5	22.1	39.3	n/a	n/a	n/a	n/a	
Electrical supply			230V/1ph/50Hz				415V/3ph/50Hz			
Max power (motor/elec heating)	kW	0.75	1.13	1.50	1.88	22.6	33.6	45.2	56.2	
Max running current	A	3.3	4.9	6.6	8.3	3 x 35.0	3 x 52.0	3 x 70.0	3 x 87.0	
Noise level at 3m*	@ Speed 2 dB(A)	43	45	46	47	43	45	46	47	
Weight (dry)	Model F	kg	63	94	119	151	69	104	137	170
	Model R	kg	81	139	153	194	87	149	171	213
	Model R(O)	kg	73	110	138	175	79	120	156	194
	Model C	kg	79	116	149	188	85	126	167	207

* Typically NR = dB(A) - 4

** Heating capacities A/B

A: Denotes the maximum heating capacity with 82/71°C flow & return water temperatures. The unit discharges air at its maximum temperature.

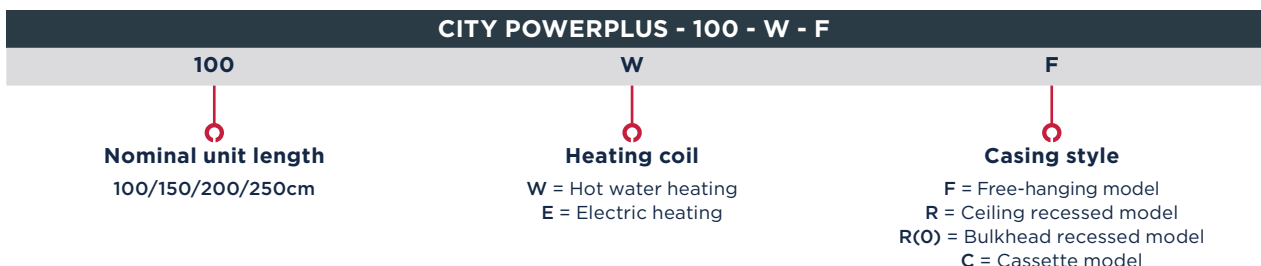
B: Denotes the capacity when the optional 3 port valve is fitted, controlling the discharge air temperature to 35°C.

BENEFITS

- High performance unit
- Mounting heights up to 3.7m
- Suitable for malls and large retail outlets
- Incorporates patented Invisidor technology

MODEL REFERENCE

The model reference consists of a code giving unit size, coil and casing arrangement.



CONDENSING BOILER RANGE

CITY CB

CITY CB	150 W*	200 W*	250 W*
Maximum installation height (m)	2.7	2.7	2.7
Optimum door width (m)	1.3	1.8	2.3
Unit width (m)	1.5	2.0	2.5
Heating capacity/off coil temperature (kW/°C)			
Speed 1	5.04/37	7.25/39	9.48/39
Speed 2	6.08/36	8.78/37	11.5/38
Speed 3	7.54/34	11.0/35	14.4/36
Air volume (m ³ /s)			
Speed 1	0.257	0.343	0.429
Speed 2	0.343	0.457	0.572
Speed 3	0.485	0.648	0.808






CITY PLUS CB

CITY PLUS CB	150 W*	200 W*	250 W*
Maximum installation height (m)	3.2	3.2	3.2
Optimum door width (m)	1.3	1.8	2.3
Unit width (m)	1.5	2.0	2.5
Heating capacity/off coil temperature (kW/°C)			
Speed 1	6.33/35	9.14/37	12.0/37
Speed 2	7.78/34	11.3/35	14.9/36
Speed 3	9.14/33	13.3/34	17.6/34
Air volume (m ³ /s)			
Speed 1	0.365	0.486	0.608
Speed 2	0.510	0.679	0.849
Speed 3	0.669	0.892	1.115

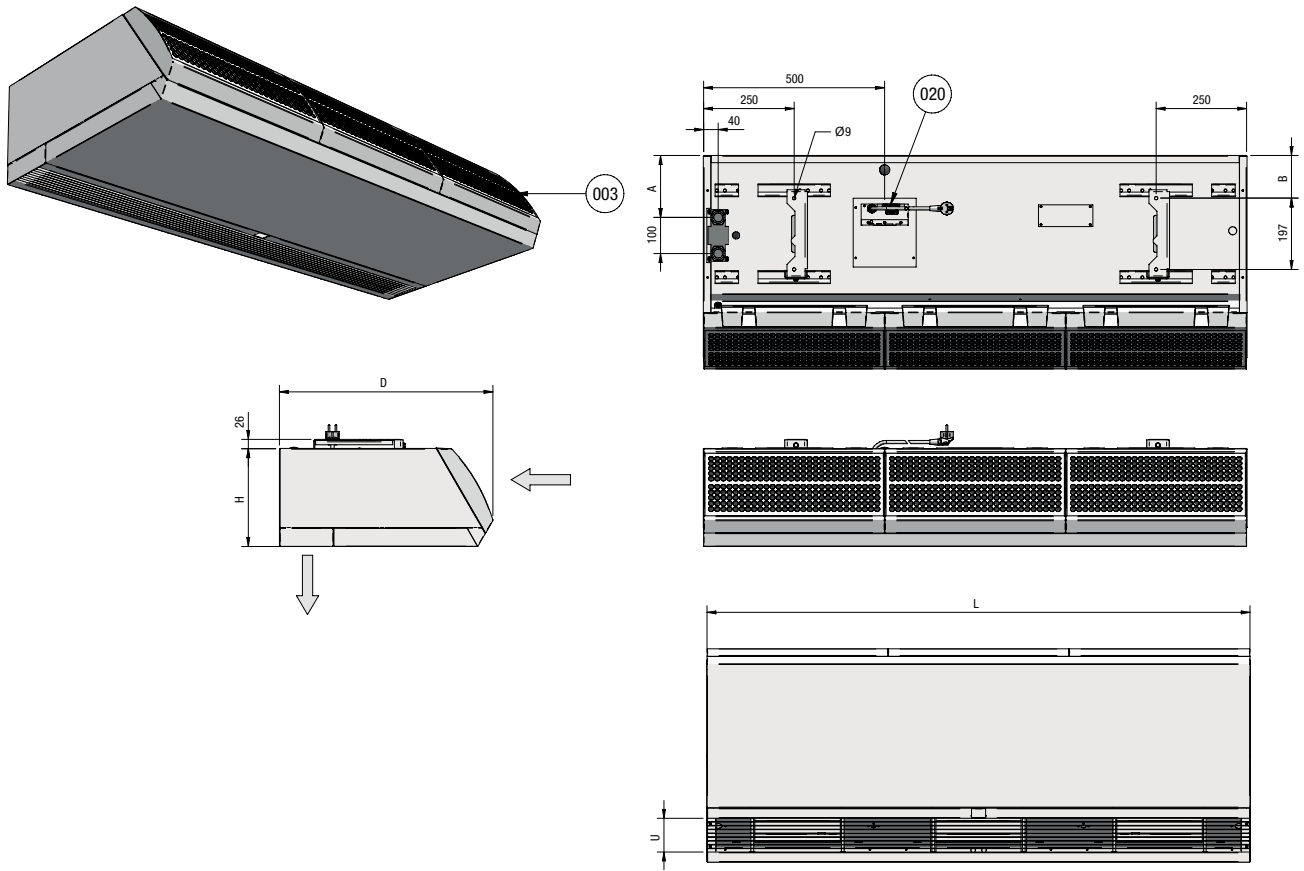
*Denotes casing style to be added to complete product reference.

Performance based on LPHW:  Flow 60°C  Return 40°C  Entering Air Temperature 21°C

BENEFITS

-  For use with lower water temperatures
-  Energy efficient
-  Incorporates patented Invisidor technology
-  Choice of casing styles
-  Choose from 1500mm, 2000mm or 2500mm long units

FREE HANGING MODEL DRAWING



Type	L	H	D	U	A	B
CITY / CITY PLUS	1000-1500-2000-2500	270	590	93	170	119
CITY POWERPLUS		370	774	125	245	200

EXPLANATION OF DIMENSIONAL SKETCHES

○ Models

Free hanging: by removing the end panels, the units are easy to interlink.

Cassette: aperture sizes = $(A+8) \times (C+8)$ mm.

Recessed: aperture sizes:

- for air discharge $(A+8) \times (D+8)$ mm
- for air inlet: $(A+8) \times (I+8)$ mm. If the recessed model is to be built into a bulkhead, it is also available in a design that has no inlet air plenum or flexible ducts.

○ Wall suspension brackets and threaded rod covers

- Material of threaded rod covers: zinc coated steel, painted, to a standard colour of RAL 9016 or RAL 9006.

○ Note

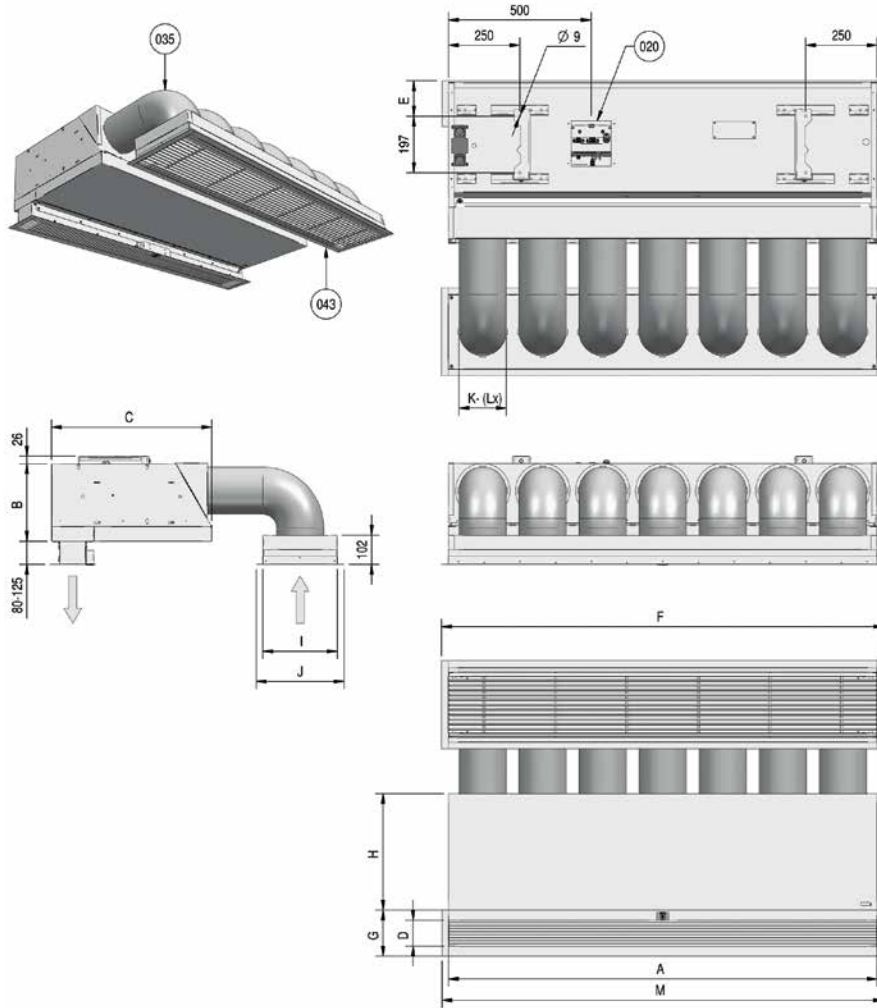
- All dimensions are in mm.
- 2500 mm units have 3 suspension brackets. All other sizes have 2 suspension brackets.

INDEX

The corresponding numbers in the dimensional sketches are explained here:

3-Air inlet grille with filter. **20**-Connection plate.

RECESSED MODEL DRAWING



	A	B	C	D	E	F	G	H	I	J	K	L	M
CITY / CITY PLUS 100	1000	270	561	90	125	1048	160	406	261	307	Ø160	5	1045
CITY / CITY PLUS 150	1500	270	561	90	125	1548	160	406	261	307	Ø160	7	1545
CITY / CITY PLUS 200	2000	270	561	90	125	2048	160	406	261	307	Ø160	10	2045
CITY / CITY PLUS 250	2500	270	561	90	125	2548	160	406	261	307	Ø160	12	2545
CITY POWERPLUS 100	1000	370	745	122	206	1048	191	559	361	407	Ø250	3	1045
CITY POWERPLUS 150	1500	370	745	122	206	1548	191	559	361	407	Ø250	5	1545
CITY POWERPLUS 200	2000	370	745	122	206	2048	191	559	361	407	Ø250	6	2045
CITY POWERPLUS 250	2500	370	745	122	206	2548	191	559	361	407	Ø250	8	2545

EXPLANATION OF DIMENSIONAL SKETCHES

○ Models

Free hanging: by removing the end panels, the units are easy to interlink.

Cassette: aperture sizes = (A+8) x (C+8) mm.

Recessed: aperture sizes:

- for air discharge (A+8) x (D+8) mm
- for air inlet: (A+8) x (I+8) mm. If the recessed model is to be built into a bulkhead, it is also available in a design that has no inlet air plenum or flexible ducts.

○ Wall suspension brackets and threaded rod covers

- Material of threaded rod covers: zinc coated steel, painted, to a standard colour of RAL 9016 or RAL 9006.

○ Note

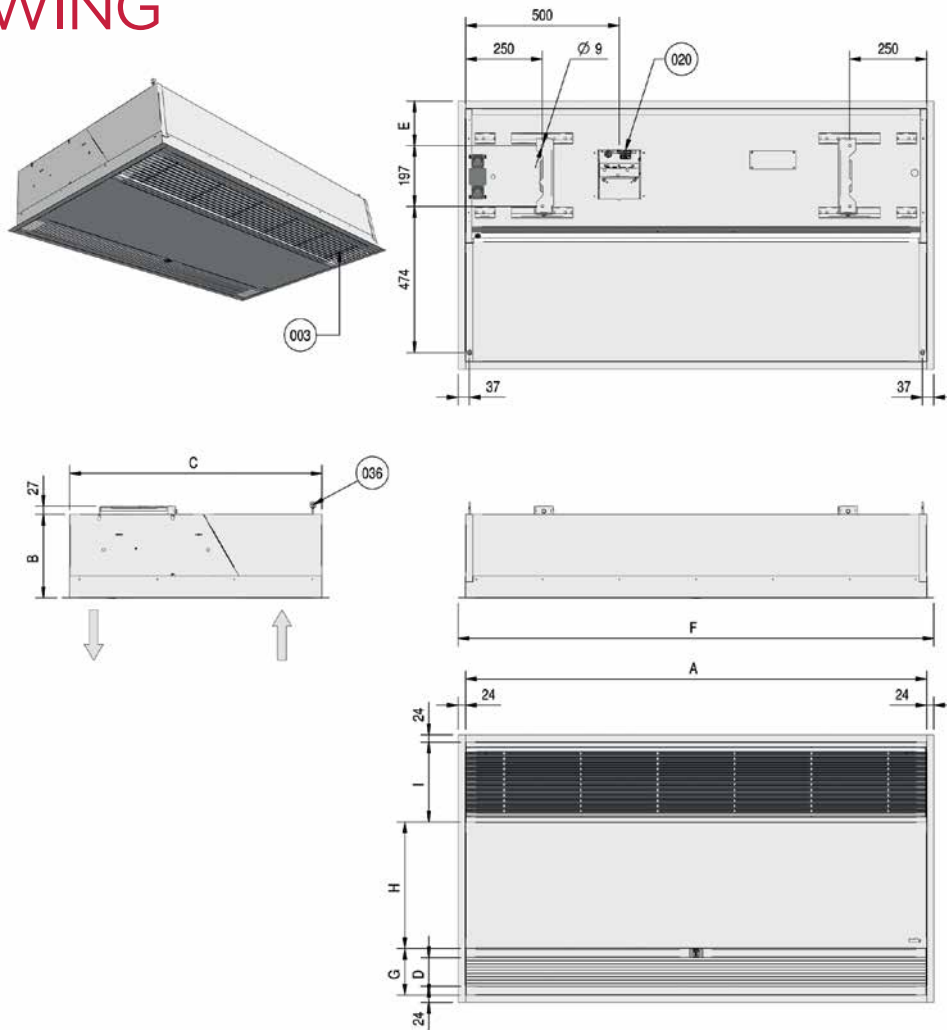
- All dimensions are in mm.
- 2500 mm units have 3 suspension brackets. All other sizes have 2 suspension brackets.

INDEX

The corresponding numbers in the dimensional sketches are explained here:

20-Connection plate. **35**-Ducts are not supplied. **43**-Finishing sections supplied separately.

CASSETTE MODEL DRAWING



	A	B	C	D	E	F	G	H	I
CITY / CITY PLUS 100	1000	270	821	93	144	1048	150	411	260
CITY / CITY PLUS 150	1500	270	821	93	144	1548	150	411	260
CITY / CITY PLUS 200	2000	270	821	93	144	2048	150	411	260
CITY / CITY PLUS 250	2500	270	821	93	144	2548	150	411	260
CITY POWERPLUS 100	1000	370	1105	125	175	1048	182	564	360
CITY POWERPLUS 150	1500	370	1105	125	175	1548	182	564	360
CITY POWERPLUS 200	2000	370	1105	125	175	2048	182	564	360
CITY POWERPLUS 250	2500	370	1105	125	175	2548	182	564	360

EXPLANATION OF DIMENSIONAL SKETCHES

○ Models

Free hanging: by removing the end panels, the units are easy to interlink.

Cassette: aperture sizes = (A+8) x (C+8) mm.

Recessed: aperture sizes:

- for air discharge (A+8) x (D+8) mm
- for air inlet: (A+8) x (I+8) mm. If the recessed model is to be built into a bulkhead, it is also available in a design that has no inlet air plenum or flexible ducts.

○ Wall suspension brackets and threaded rod covers

- Material of threaded rod covers: zinc coated steel, painted, to a standard colour of RAL 9016 or RAL 9006.

○ Note

- All dimensions are in mm.
- 2500 mm units have 3 suspension brackets. All other sizes have 2 suspension brackets.

INDEX

The corresponding numbers in the dimensional sketches are explained here:

3-Air inlet grille with filter. **20**-Connection plate. **36**-Eye bolt M6.

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Biddle

Every effort has been made to ensure descriptions are correct at the time of print.
Errors and omissions excepted. CITY|V1|10|2019